Crisis management and sustainable development: a framework and proposed research agenda

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Abstract: The fields of crisis management and sustainable development have maintained separate research paths. However, these fields are closely linked. Crisis events can deplete resources needed by future generations, ultimately hindering efforts at sustainable development. This paper proposes a research agenda and provides a four-phase framework that integrates these two growing research fields.

Keywords: crisis management; sustainable development; accidents; disasters.

Reference to this paper should be made as follows: Crandall, W.R. and Mensah, E.C. (2008) 'Crisis management and sustainable development: a framework and proposed research agenda', *Int. J. Sustainable Strategic Management*, Vol. 1, No. 1, pp.16–34.

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1 Introduction

Sustainable development has been quite the buzzword for business and government entities during the past 20 years. Indeed, proceeding with economic growth while maintaining the integrity and resources of the environment is necessary for the well-being of local societies at the microlevel, perhaps even mankind at the macrolevel. Occasionally however, an unexpected 'event' occurs that has ramifications for the

environment as well as business, government and society. The event is acute in nature, (Thorne et al., 2003), has negative fallout with stakeholders (Coombs, 2006) and tends to disrupt the normal operations of the firm (Barton, 2001). This crisis event could be an oil spill, a chemical leak, an airborne release of nuclear residue or a water contamination incident. The field of crisis management seeks to minimise the occurrence of these crisis events and mitigate the ones that do occur (Pearson and Clair, 1998).

Crisis events are acute occurrences, but can have long-term effects on the environment as well as policy implications for business and government. While there is an abundance of growing literature in the area of crisis management, there is little that links it to sustainable development. Perhaps this is not surprising because crisis management has traditionally focused on high-profile events that attract a great deal of public attention in the short-run, but are soon forgotten when the next big crisis occurs. Sustainable development addresses a larger macro level and does not necessarily focus on any one particular event. It is more of a philosophy on how to sustain the environment while promoting economic growth (Stead and Stead, 2004).

It is not surprising that a relationship between crisis management and sustainable development has not been clarified in the literature. Yet, crisis management is an important element of sustainable development, which should be acknowledged in the firm's crisis management programme. At least two rationales exist for this relationship. Firstly, an acute, environmental crisis can restrict sustainable development in the long-term. For example, an oil spill is an acute event – a crisis – that can also negatively influence the long-term survivability of environmental stakeholders. As a result, the seafood industry of the affected area is a renewable resource that can find itself in jeopardy during a water contamination event. Secondly, the steady growth of a firm (and on a larger scale, a society) can gradually deplete a renewable resource faster than it is being replenished, resulting in a second type of crisis. Oil, water, air and land are noticeable resources that have been negatively depleted by various consumer groups. The resulting crises can haunt a firm that seeks profits while attempting to satisfy a need dictated by society.

The goals of crisis management and sustainable development are not mutually exclusive, but remarkably complimentary. Crisis management seeks to minimise and mitigate unfortunate events that occur in the life of the firm. Sustainable development seeks to insure that the resources available to the firm and society are well stocked and replenished, and then made available to the next generation of users. With this in mind, a framework for understanding crises within the context of sustainable development seems plausible. In this article, we propose a framework for understanding crisis, and then apply it to the study of sustainable development. The result is a structure for researchers and practitioners to frame issues and research agendas that unite these two disciplines. We begin by introducing the crisis management framework. Next, we interweave a discussion of sustainable development within the framework. Finally, we propose a research agenda that strengthens the link between the two fields.

2 A crisis management framework

Crisis management is a subfield of management that addresses unfortunate events in the life of an organisation. It was formally recognised after Johnson & Johnson experienced product sabotage when its Tylenol Extra Strength pain reliever was laced with deadly

cyanide (Mitroff and Anagnos, 2001; Pines, 2000). However, a business crisis need not be of this magnitude to have devastating consequences. Many crises start out as rather small events and fester, but because of management ineptitude, intensify to the point that a full-blown crisis emerges. This is particularly true when an ethical breach has occurred in the organisation. This particular type of crisis has been labelled a 'smoldering crisis'. According to Millar (2003, p.4) of the Institute for Crisis Management, "a smoldering crisis is one that starts out small and internal, and should be spotted as a problem and a potential crisis before it goes public". Consequently, many of these types of crises can be spawned by a lack of personal ethics on the part of management. For example, the scandal in the Catholic Church concerning child molestation by priests, as well as the Enron accounting fiasco have gained much public attention in recent years. Both qualify as major crisis events and both had internal origins with human greed at the source.

A crisis can result in both an operational production failure and a public relations fiasco. Crisis events can also lead to legal problems that disrupt the normal functioning of business activities. Some have environmental ramifications that cause unnecessary depletion of natural resources. The demands of daily operations and crisis management are so important that organisations must have crisis-management plans and teams in place to maintain business continuity (Barton, 2001; Coombs, 2006).

Four themes are common in the crisis management literature:

1 crisis events have a low probability of occurring and are usually unexpected (Barton, 2001; Pearson and Clair, 1998; Sellnow and Seeger, 2001)

2 crises can have a highly damaging impact are the environment, the organisation, and society (Irvine and Millar, 1997; Shrivastava, 1995)

3 crises require decisive action (Barton, 2001; Fink, 1986)

4 crises need attention within an expedient time frame (Coombs, 2007; Greening and Johnson, 1996; Marra, 1998).

Although various definitions of organisational crisis have been proposed, Coombs (2007, pp.4–5) offered this recent assessment of a crisis as "an unpredictable event that threatens important expectancies of stakeholders and can seriously impair the organization's performance and generate negative outcomes". Within the context of sustainable development, the key stakeholders impacted are the environment, the associated resources, the firm and society. Negative outcomes are the result of a crisis, which necessitates the need for crisis management. Such outcomes include damage to the environment, the loss of a quantity of a natural resource, injury to the firm including, physical, public relations, human and economic damage.

As a response to a critical event, decisions made in crisis management seek to mitigate the impact of such a predicament. Pearson and Clair's definition takes into account a stakeholder perspective:

> "Organizational crisis management is a systematic attempt by organizational members with external stakeholders to avert crises or to effectively manage those that occur" (Pearson and Clair, 1998, p.61).

Crisis management seeks to soften the impact of those negative events that occur to the organisation and its stakeholders. An emphasis on maintaining positive relationships with external stakeholders (i.e. those outside the firm) is an important by-product of crisis

management. Consequently, the local community and its sustainable resources for the firm are of concern to the crisis manager seeking to operate within the realm of sustainable development practices.

3 A crisis management framework

Understanding a basic framework of crisis management is essential in evaluating an organisational crisis. Figure 1 offers a framework that synthesises much of the research on crisis management applications.

Figure 1 A framework for crisis management

	Landscape survey	Strategic planning	Crisis management	Organisational Learning
The internal landscape	• Propensity for crisis management • Organisational culture • Ethical environment • Company safety policies	• Form crisis management team • Develop worst-case scenarios • Formulate crisis management plan • Conduct mock disasters and training	• Primary stakeholder management • Secondary stakeholder management	• Organisational learning • Organisational renewal • Evaluate success or failure of crisis management planning
The external landscape	• Industry vulnerability • Degree of political stability • Globalisation implications • Technological implications	• Existing government regulations • Industry standards **Crisis**	• Reactions of stakeholders o Negative media coverage o Public outcry o Web based criticism and company hate websit es o Impending government regulations	• Industry renewal • New government regulations • New stakeholder outlooks

4 Landscape survey

Before the firm can effectively anticipate potential crisis events, it must conduct an assessment of its internal and external environments. We label this procedure the landscape survey. Figure 1 begins at the left with the landscape survey. The top half of the survey examines processes that occur within the organisation, the internal landscape. For example, the enthusiasm for crisis planning is its propensity for crisis management. Some organisations are highly motivated to prepare for crisis events; others are more complacent and have been labelled crisis prone (Pearson and Mitroff, 1993). This degree of propensity for crisis management is also a function of the organisation's corporate culture (Elsubbaugh et al., 2004; Sheaffer et al., 1998; Stead and Smallman, 1999), its ethical environment (Hartley, 1993) and the degree of company safety policies in place (Sethi and Steidlmeir, 1997).

The bottom half of the landscape survey focuses on events occurring outside of the organisation, the external landscape. The industry vulnerability is at the forefront of what types of crises may face a specific organisation. For example, firms in the chemical

industry are concerned about chemical leaks. Foodservice institutions focus on crises pertaining to food borne illnesses. Within the lodging industry, the safety of guests is a major source of potential crises.

Another consideration is globalisation, much of which can occur at the expense of a major stakeholder. For example, manufacturing operations that exit the home country for cheaper labour in another country usually leave a wake of unemployed workers back in the home country (Fishman, 2006). Another trade-off occurs when the environmental resources in another country are depleted without consideration for replenishment.

The technological ramifications of the industry must also be considered as part of the external landscape. Although most practitioners and scholars would acknowledge the importance of technology in any industry, for some industries, it can lay the groundwork for a crisis, particularly when it causes environmental degradation. The manufacturing of certain products can spew contaminants into the air, water and ground. In the transportation sector, the shipping industry has long been overlooked in its contribution to air pollution. Evidence indicates that the impact of cargo ships on the environment has negative connotations, particularly with air quality, and that this impact will continue to escalate as globalisation increases (Gallagher, 2005). Technologies exist that can also reduce and in some cases eliminate these forms of pollution, but the trade-off is higher manufacturing costs. Some countries are more liberal though in their allowances of contaminants into the natural environment. Such countries often become attractive to manufacturers seeking to reduce costs. Unfortunately, the trade-off is low costs for consumers, higher profits for the firm, but environmental damage that not only pollutes the environment, but may rapidly deplete resources as well.

5 Strategic planning

Within the crisis management framework, strategic planning refers to preventing those crises that may occur, and planning on how to mitigate the ones that do occur. The internal landscape of the organisation relies first on forming a crisis management team. This team acts as the body to manage and prevent crisis events. One of the tasks of the team is to periodically develop worst-case scenarios (Johnson and Chess, 2003). These are potential events that may occur to firms in a particular industry. For example, airlines regularly plan as a worst-case scenario, the accident of an aircraft.

Crisis management teams also formulate plans that lay out general guidelines for managing a crisis (Coombs, 2006). Such guidelines include who should talk to the media, where to locate key contact information for stakeholders, and procedures for managing specific crises unique to the organisation (Perry, 2004). In other words, these guidelines address the firm's worst-case scenarios. During the strategic planning stage, some organisations actually conduct mock disasters in order to test the organisation's crisis management response. At a minimum, training for crisis management team members should take place on a regular basis throughout the year (Morier and Egan, 2006).

Under strategic planning, the external landscape consists of stakeholders and their activities that focus on preventing and managing crisis events. Government agencies typically enact legislation that helps to prevent future crisis events in certain industries. Examples abound of these types of agencies. The Federal Aviation Administration

(FAA) and the Transportation Security Administration (TSA) work to ensure safety in the air travel industries. Some non-governmental entities impose additional standards through various trade and manufacturing associations that exist for a particular industry.

6 Crisis management

The crisis management stage addresses the acute occurrence of a crisis event. From the organisational (internal landscape) perspective, efforts are focused at containing the crisis and resuming operations as quickly as possible. What results is also the management of the primary and secondary stakeholders of the organisation (Carroll and Buchholtz, 2003). Primary stakeholders of the organisation typically include the owners, employees, customers, local communities and suppliers (Wheeler and Sillanpaa, 1997). Local communities are of special interest because they represent contact areas where the firm is located, and where some resources may originate. Environmental accidents and resource depletion may occur within these communities. Likewise, suppliers are of additional interest because they form the interface with sustainable resource outlets. Secondary stakeholders include any other groups that have some type of interest in the organisation. Environmental groups and advocates, such as support groups or Non-Government Organizations (NGOs), are represented in this group of stakeholders. Although some of the above stakeholders exist outside the domain of the firm, their management from a crisis perspective still originates from inside the firm, thus, it is the management of stakeholders during a crisis that transpires within the internal landscape as Figure 1 indicates.

The actual reactions of the stakeholders can be found in the external environment. These can include negative media coverage, public outcry; web-based criticisms including company hate sites and impending government regulations. It should be remembered that the crisis management phase does not occur until a crisis has commenced. In this framework, it is the most volatile phase of the crisis management process, but by itself, should not be viewed as the only part of the process. Indeed, in this framework, only the crisis management phase is reactive, while the other three phases are proactive. The organisational learning stage discussed next, depicts the fourth phase of the crisis management process.

7 Organisational learning

After the crisis is over, the firm must take time to learn from what has occurred. There is an optimal time period to learn from a crisis. If too much time elapses before an evaluation, management may reach a stage termed ‘forgetfulness’ (Kovoor-Misra and Nathan, 2000). In this stage, the organisation has returned to normal operations and the motivation to evaluate and learn from the crisis wanes.

At a minimum, management must evaluate how the crisis was handled and what changes need to be made in the crisis management plan. Pearson and Clair (1998) have suggested that such an evaluation can be looked at in terms of degrees of success and failure. For example, an organisation may be successful at resuming operations in a timely manner, but fail at protecting its reputation during the ordeal. In learning from a crisis, Pearson and Clair note that some organisations do not seem to learn from the

crisis, and as a result, make the same mistakes over again when similar incidents occur. On the other hand, a successful learning organisation will change its policies and procedures if necessary and apply that new knowledge to future crisis events. If the crisis involves damage to a natural resource or the unnecessary waste of a renewable resource, then efforts are made to mitigate the damage and sustain the long-term renewal of the resource.

Some organisations will change for the better after a crisis (Bertrand and Lajtha, 2002). It is as if the crisis spurned a wave of creative energy that leads to organisational renewal. Crandall (2007) discusses this renewal in relation to the Malden Mills fire. In this incident, Malden Mills, a textile manufacturer in Massachusetts lost its production capability during a devastating fire. The company survived the ordeal, and kept most of its employees on the payroll, even as the plant was rebuilding. In the end, the physical structure and infrastructure of the mill improved for the better. The ordeal forced the mill to install a new IT system, one that had been needed for awhile, but had to be put in use earlier than anticipated. As industry analyst Bruce Richardson put it, "Sometimes it takes a cataclysmic event like a major fire to bring about profound change in an organization, and that's clearly working here…Left to their own devices, people usually don't make such sweeping changes" (Hamblen, 1997, p.1). This example illustrates a common theme in crisis management; sometimes a negative event can yield positive outcomes in the long run.

In the external landscape, industries often reevaluate and renew their procedures after a crisis. Certainly the airline industry has changed dramatically, and most likely for the better, after America's worst terrorist incident on 11 September 2001. Government regulations are often implemented after a crisis. Many times, these regulations are meant to increase the safety for stakeholders in the affected industry. Stakeholders external to the organisation may also change their outlooks after a crisis. At a minimum, such stakeholders will be more aware and compassionate towards an organisation that has experienced a crisis. The Virginia Tech massacre of 2007 spurned a wave of sympathy and solidarity among many citizens throughout the country, and worldwide. At the same time, some groups will also be critical towards the university, questioning whether certain measures could have been taken to prevent or mitigate the crisis.

8 A proposed research agenda

There is a movement afoot suggesting that "the entire crisis management landscape is changing" (Bertrand and Lajtha, 2002, p.183). Until recently, crisis management has not been clearly linked to sustainable development in the management and sustainable development fields (McEntire et al., 2002). And yet, as Bertrand and Lajtha (2002) suggest, fundamental changes are occurring in crisis management that will make this discipline look much different in the future. We believe that crisis management and sustainable development are not only related, but in need of an aggressive research agenda. In the crisis management literature, a great deal of attention has been focused on terrorism, natural disasters and ethical breaches within business firms. Much attention has also been directed to crises that have affected the environment, such as the now famous 1980s trilogy: Union Carbide's Bhopal Incident (1984), the Chernobyl radiation leak (1986) and the Exxon Valdez oil spill (1989). However, the research tends to focus on isolating the cause of the incidents, as opposed to addressing the renewal of resources.

Perhaps the best way to see the linkages between these two disciplines is to reexamine the crisis management framework in Figure 1. Figure 2 offers a research agenda linking crisis management and sustainable development using the framework discussed above.

Figure 2 A crisis management framework for sustainable development and proposed research agenda

	Landscape survey	Strategic planning	Crisis management	Organisational learning
The internal landscape	• What incentives do companies have to pursue SD? • What cultural differences exist among companies that are pro-SDs versus. those that are not?	• Are any crisis management teams addressing SD? • What are the worst - case scenarios that apply to SD? • How will crisis training and planning change as SD becomes more prominent?	• Which stakeholders seem to be the most effective in promoting SD? • Which stakeholders are detrimental?	• How have firms reinvented thems elves to support SD after facing a crisis? • What standards can organisations use to evaluate their success or failure in crisis management and SD?
The external landscape	• Which industries are the most 'crisis prone' to faltering on utilising resources? • How can globalisation enhance SD? • Which technologies offer the most promise of sustaining resources?	• Which governments tend to be the most successful at planning for crises and SD efforts? • How can industry standards be effective in promoting SD? Crisis	• How c an the media better promote SD during a crisis? • How do the politics of disaster hurt or help SD initiatives?	• How have local communities and industries changed in response to a crisis to better support SD? • How are government efforts hurting or helping adva ncing the cause of SD?

9 Research agenda for the landscape survey

The internal landscape of the organisation has been a major focus arena for management scholars, perhaps less for those active in sustainable development. And yet, action originates from beliefs systems, and corporate culture offers a starting point for how firms will address sustainable development initiatives. The internal landscape from the framework offers the following research questions.

9.1 What incentives do companies have to pursue sustainable development?

The incentives to support sustainable development are still relatively few. Furthermore, for successful sustainable development practices to take place, entire systems of firms, governments and countries must work together. A single firm, operating apart from such a network will feel isolated and without momentum in promoting an agenda that goes against the flow of its local constituents.

Of special concern to crisis management scholars are the role accidents, disasters and political turmoil play in a sustainable future (Shrivastava, 1995). Inherent in this discussion is the role of a crisis in spurning interest in sustainable development. For example, did an interruption of resources, perhaps oil, resulting from a crisis, perhaps a war, sway the firm and/or its government, to pursue alternative fuel supplies? Another scenario involves the crisis of floods, which ironically, can cause drinking water shortages. Have such disasters been the impetus to cause municipalities to pursue long-range sustainable management of its water supply resources?

9.2 What cultural differences exist among firms that are pro-sustainable development versus those that are not?

Interface, Inc., a manufacturer of floor covering based in Atlanta, Georgia has an aggressive sustainable development programme (Hensler, 2006). This is quite a task given that floor covering such as carpet and tile not only use a great amount of resources in the manufacturing process, but contribute to sizeable landfill amounts as well. A look at the company's website (www.interfacesustainsbility.com) reveals an extensive sustainable development model. But what is this company's story and others like it? What are the commonalities, the cultural characteristics, and the visions that link firms together into aggressively supporting sustainable resource initiatives? Furthermore, do these companies arrive at their convictions as a result of some type of organisational crisis, or is it the vision of the founder/owner that propels these convictions?

The external landscape looks outside the firm and acknowledges forces that affect a firm's crisis management practices. The following research questions are proposed that include these outside forces.

9.3 Which industries are the most 'crisis prone' for faltering on utilising sustainable resources?

Much is written in the crisis management literature on hazardous industries. Little exists on how specific industries impede the flow of sustainable resources via a crisis. Obvious examples certainly exist, such as when oil spills occur from a supertanker or when toxic chemicals are accidentally leaked into the atmosphere. Indeed, even specific companies are often linked to resource contamination incidents such as gas leaks at Union Carbide, oil spills at Exxon and chemical spills at Dow Chemical (Barton, 2001).

Less obvious examples are when ground areas are contaminated by toxic chemicals from abandoned plants or other sources. The Hooker Chemical incident and the subsequent Love Canal contamination offer a dramatic illustration of this linkage. This event transpired over a number of years from the mid 1940s to 1953 as the Hooker Chemical Company dumped its toxic wastes into the adjacent Love Canal, an area in New York State near Niagara Falls. The land near the Love Canal was purchased by the City of Niagara Falls in 1953 for $1 (Vernon, 1998). A school, shopping centre and housing were later constructed. Then, in the 1970s, many local citizens started having health problems; including breast cancer, stillbirths, heart disease and leukemia (Barton, 2001). Many other contamination incidents similar to Love Canal may still remain undetected, however. Another less obvious crisis occurs is the result of large parking lots being constructed to accommodate malls and shopping centres. The result is excessive storm water runoff, which creates subsequent floods and damage to water supplies. From a crisis management perspective, future research could focus on the long-term impact of how business development 'robs' environmental resources through less obvious venues.

9.4 How can globalisation enhance sustainable development?

At present, there appears to be a negative depletion of resources as globalisation continues. But what counter strategies are in place to offset this trend? Is it possible that globalisation can actually enhance sustainable development in the long-run? Although

this area of research is not directly connected to the occurrence of an acute crisis event, the inquisitive nature of this stream does serve to deter future occurrences of environmental catastrophes.

9.5 Which technologies offer the most promise of sustaining resources in a crisis-free manner?

Technology is traditionally a consumer of natural resources. However, technology also enables resources to be used less, or substituted altogether. Increasing the fuel efficiency of an automobile illustrates the use of fewer resources, while developing a vehicle that runs on alternate fuel, such as vegetable oil or hydrogen, illustrates a substitution of resources. Technological innovation and implementation varies in its seamlessness, or ability to be crisis free. The use of nuclear power in electricity generation illustrates this dilemma. While nuclear energy did not require the use of oil or coal fired resources, it carried with it, a whole set of safety and security related crises. The Three Mile Island incident remains the classic reminder of the dangers of this form of technology. Although a catastrophe was avoided, 28 March 1979, and several days afterwards were full of international attention on the Three Mile Island Nuclear plant outside of Harrisburg, Pennsylvania.

> "A gas bubble building within this major nuclear plant threatened to spew radiation into the air, with a potential loss of life far beyond Harrisburg, Pennsylvania…For the first time, the nation's vulnerability to nuclear catastrophe was more than theoretical" (Barton, 2001, p.22).

Crisis researchers will need to watch closely the new technologies that will be used to generate electricity. According to the Department of Energy website, coal will continue to be used to supply the majority of energy needed in the USA. Efforts are underway to create the first zero emissions coal plant dubbed *FutureGen*. Other countries besides the USA will be involved in this project (Department of Energy Website, 2007). While these efforts are promising, crisis researchers and managers know that unforeseen risks can always occur when new technologies are developed.

10 Research agenda for strategic planning

The internal landscape looks at the crisis planning activities that occur inside the organisation. The following research agenda is offered.

10.1 Are any crisis management teams addressing sustainable development?

A number of crisis events can be closely linked to sustainable development. Several examples may suffice for now. The Exxon Valdez oil spill of 1989 was one of the most publicly denounced accidents in corporate history. In times of a major corporate crisis, it is fashionable for many to point fingers and criticise a large corporate giant because for some, it is a sport to identify corporate ineptness. But, on a deeper level, the important concern for those involved in sustainable development was the waste of two resources, one finite and one renewable, oil and seafood, respectively. The connection between crisis and maintaining resources was publicly identified in this unfortunate accident.

Many crisis events are less dramatic and do not arouse the type of publicity that the Exxon Valdez oil spill did. Companies involved in small-scale chemical spills, air emissions, groundwater leakages and even flooding, can infringe on the well-being and availability of a renewable resource. Crisis management planning should involve the quick attention to these types of events, as well as long-term thinking on how to prevent them from occurring in the future. Research efforts should focus on what company crisis teams are doing to plan for long-term sustainability.

10.2 What are the worst-case scenarios that apply to sustainable development?

Based on the above discussion, more attention should be focused on identifying the appropriate worst-case scenarios that impact sustainable development. This task is actually a two-phase process. There is both an arresting and repairing phase when a crisis involves violating the integrity of the supplying of a resource. The arresting process deals with stopping the flow of something. This could be the flow of the resource itself such as oil spilling into a bay. It could also involve stopping the flow of a pollutant that threatens a resource, for example, the flow of a chemical into a river or lake. Ironically, in the case of an oil spill, it represents both a pollutant and a finite resource damaging another finite resource, in this case, water.

The repairing phase corrects the initial problem; the leak is stopped. But the process needs to go deeper, to change practices so a future leak does not occur *and* to address how the resource can be made more renewable. The crisis management literature can enter an exciting stage of research to identify those firms that are taking the crisis mitigation-prevention-renewal process further. Few companies are in this process at the present moment. This proposed research agenda posits that momentum can be increased to learn more about the renewal process, and to encourage other companies to do the same.

10.3 How will crisis training and planning change as sustainable development becomes more prominent?

Much of the crisis management training focuses on developing public relations skills and implementing mock disasters. These are excellent training activities for the firm preparing for a major crisis. When sustainable development initiatives are added to the list of concerns, the potential scope of training activities will broaden. Such training activities could focus on the interruption of a major resource. For example, California State Polytechnic University ran a mock disaster drill that simulated the loss of water due to an earthquake at its Los Olivos Dining Commons (King, 2000). The foodservice staff had to provide a meal without the use of water. To compensate for this interruption of a key resource, water was obtained by melting ice retrieved from the ice dispensers. Bottled water was provided for drinking and food offerings were adjusted. The drill was appropriate, given that water could be interrupted either due to wild fires in the area, or because of the occurrence of an earthquake.

The external landscape addresses issues occurring outside of the organisation during crisis management planning. These issues reside in the area of government and industry planning for crises. The following research agenda is proposed.

10.4 Which types of governments tend to be the most successful at planning for crises and sustainable development efforts?

The reference to government can be on a local, regional, state, province or country basis. Indeed, within the same country, the local response to a crisis can vary in terms of the quality of outcomes. In this research question, we are drawing attention to those crisis events that are interwoven with the successful implementation and practice of sustainable development at the governmental level. For example, if a major disruption of oil occurred, how would local governments respond? How would countries respond? The likelihood of such a crisis is very real, particularly if the country of Saudi Arabia were to become politically unstable (Bremmer, 2006).

In the short-run, local governments would be forced to conserve fuel and cut back on services. At the country level, responses would vary depending on the need for oil and perhaps, the ability of the military to intervene in some manner. In the long-term, options for local governments would include changing energy needs to alternative fuel via technological innovation. In strategic planning, there is a line in the sand between maintaining a dependence on oil, and seeking alternate fuels to replace that need for oil. Part of this research question then, seeks to identify governments, policies and infrastructures that react to this type of crisis by looking at options that may include alternative fuel sources.

10.5 How can industry standards be effective in promoting sustainable development?

This question is similar to the previous one, except it addresses the industry level. Industry standards do often change after a crisis. Usually, the changes revolve around safety and reporting procedures. Little has occurred in the sustainable development realm whereby a crisis has led to better sustainable development practices. Future research should focus on the linkages which could exist between a crisis, industry standards and promoting sustainable development.

11 Research agenda for crisis management

The crisis management stage involves the reaction of the organisation to an acute occurrence of a crisis. A major part of this management phase is addressing the needs of the firm's stakeholders. Usually, this involves restoring the functions of the organisation to its normal levels, while addressing the needs of employees, customers, owners, suppliers and groups that are outside the organisation. The internal landscape address issues at the micro or organisational level. Proposed research questions follow.

11.1 Which stakeholders seem to be the most effective in promoting sustainable development?

When a crisis occurs, certain stakeholders will emerge as benefitting the organisation. Again, we wish to focus on those efforts and stakeholders that can move the organisation successfully through the crisis, while simultaneously, encouraging it to promote sustainable development. However, the stakeholder origin appears to be unclear at this

point. Certainly the CEO and crisis management teams are important. But other stakeholders within the organisation can be vocal as well, such as employee groups and labour unions. Case studies may offer the most promise in this venue of research.

11.2 Which stakeholders are detrimental?

Faced with a crisis, an organisation or industry may choose to emerge from the situation by exploiting citizens elsewhere. This occurred with the asbestos manufacturing industry during the 1990s as it faced numerous lawsuits. Although virtually non-existent in the USA, asbestos manufacturing relocated and flourished as an export industry in Brazil, Pakistan and India (Steiner and Steiner, 2000). Although not a sustainable development incident, the example illustrates how developing countries can be exploited.

Certainly, in the realm of sustainable development, rogue stakeholders have chosen to deplete resources after emerging from crisis situations, often at the expense of a developing country. The identification of these parties remains elusive, although in the popular press, they are often identified under the guise of 'corporate greed'. Again, case studies may offer the best approach to this area of research.

The external landscape under the crisis management phase looks at the reaction of parties outside of the organisation during the acute stage of the crisis. The following two research questions are proposed.

11.3 How can the media better promote sustainable development during a crisis?

The media can make a crisis worse by focusing on the negative and focusing blame at 'alleged' guilty parties before causation can even be established. Nowhere was this more evident than in the news reporting immediately after the arrival of Hurricane Katrina. Media coverage hit record inaccuracies when reports surfaced that bands of rapists were going block to block in New Orleans (Olasky, 2006). Many other reports surfaced lacked a factual basis. Much of the media attention focused on who was to be blamed for the poor lack of emergency response from authorities. Given this backdrop, how can media networks be encouraged to cover events in a more neutral or even positive manner? Furthermore, what can be done to focus the news more on how a crisis can spurn interest in renewable resources? For example, an environmental disaster is more than just the reporting of an oil spill, it is the opportunity to make the public more aware of how finite resources can be better utilised. It is also an opportunity to focus on alternative fuel resources. But traditionally news reporting rarely ventures into these virtuous topics. Often, such reporting becomes more engulfed in a speculative blame game that adds nothing to the problem of sustaining resources.

11.4 How do the politics of disaster hurt or help sustainable develop initiatives?

The politics of disaster revolves around the actions of government and how it responds, sometimes inefficiently, to crisis events such as natural disasters. Certainly, Hurricane Katrina, may offer the ultimate case study on the politics of disaster (Olasky, 2006). There is much written about how government can be more effective during a disaster, but little that addresses how it can sustain resources when a disaster impacts a finite resource.

Most disaster response is short-term in scope, focusing on the restoration of services to the affected communities. But moving government to assess their disaster responses in light of the sustaining of resources is also necessary.

12 Research agenda for organisational learning

Much of the learning that occurs after a crisis addresses the prevention of future crisis events. When the crisis involves the unnecessary interruption and depletion of resources, long-term commitments by the firm must be made. The internal landscape looks at learning from the organisation perspective. Two research questions are offered.

12.1 How have firms reinvented themselves to support sustainable development after facing a crisis?

Of fundamental interest to crisis researchers is how organisations can change for the better after a crisis. Restoring the flow of a sustainable resource is important for ensuring the short-term operation of the firm. But long-range solutions are necessary if the resource is of finite quantity or its continued supply is uncertain. For example, automakers, with the 'help' of the government, have responded to past oil shortage crises by raising the efficiency of automobiles. Commendable efforts have also been made at introducing hybrid vehicles. But in the long run, the search for alternative fuel vehicles is still slow. In fact, it is still surprising that automakers in the USA continue to invest in building gigantic, fuel hungry models. There appear to be few success stories – at least in the automotive industry – that support the long-range transition to alternative fuels.

However, in other industries, firms have responded to resource crises by working aggressively to reinvent corporate philosophies and product lines that support sustainable development. The furniture industry has made strides in moving away from endangered species wood and into alternative materials. Green movements are also visible in retail chains such as REI, a company that markets outdoor recreation equipment and fosters a corporate philosophy of taking care of the environment. In fact, REI is the first retail store in the USA to earn a Leadership in Energy and Environmental Design (LEED) certification (Chain Store Age, 2005).

12.2 What standards can organisations use to evaluate their success or failure in crisis management and SD?

Pearson and Clair (1998) reminded the crisis management community that an organisation or government may be effective in managing some aspects of crisis outcomes, while simultaneously managing ineffectively on other outcomes. They proposed seven areas of outcomes that should be evaluated:

- *Signal detection*: the organisation's ability to successfully pick up the cues that a crisis is impending.
- *Incident containment*: the organisation's ability to keep the crisis within reasonable limits.

- *Business resumption*: the organisation's ability to resume normal operations within a reasonable period of time after the crisis ensues.
- *Effects on learning*: the organisation's ability to learn from the crisis so it will not repeat the patterns that led to the initial crisis.
- *Effects on reputation*: the organisation's ability to maintain a credible reputation in the eyes of its stakeholders throughout the crisis.
- *Resource availability*: the organisation's ability to have adequate resources closely at hand in order to manage the crisis.
- *Decision-making*: the organisation's ability to make timely and accurate decisions during the crisis.

While this framework offers an excellent evaluation of crisis management effectiveness, little research is available that uses this approach. Nonetheless, the framework offers a useful format for evaluating the firm's effectiveness in sustainable development actions when confronting a crisis. We recommend its use in future research endeavours that seek to evaluate the success of crisis outcomes.

The external landscape under organisational learning focuses on the ability of local communities and industries to learn from crisis events. The following research questions are proposed.

12.3 How have local communities and industries changed in response to a crisis to better support sustainable development?

One of the positive aspects of a crisis is that it can promote learning and change at the organisational level. Positive change at the community and industry levels also occurs, but the success stories in this arena are less documented, particularly when looking at the crisis-sustainable development connection. The crisis management research community can fill this void by documenting the successes when they occur.

Of course, a crisis does not have to always be the impetus for a movement in the direction of sustainable development. Hopefully, sustainable efforts will occur in the absence of a real crisis in many cases. But history seems to indicate otherwise, in that, most changes that transpire (even outside the realm of sustainable efforts) occur as a result of a crisis. In addition, changes at the community and industry level are often slow, relative to changes at the organisational level.

12.4 How are government efforts helping or hurting advancing the cause of sustainable development?

If sustainable development is to be achieved, a combination of several measures at the government level needs to be adopted to control the rate of resource use and degradation. Examples of such approaches include the use of legislation, emission standards, taxes, etc. In a recent study, Keijzers (2004) revealed that research on the Netherlands' development of sustainable entrepreneurship, involves pollution prevention, improvement of ecoefficiency and resource productivity, optimised integrated economic,

social and ecological business strategies. Ekins (2000) provides recommendations in designing policies for sustainable development. These include:

- prevention of ozone layer depletion
- protection of ecosystems and the maintenance of biodiversity
- fostering the reproduction of renewable resources by realising sustainable yields
- balancing the depletion of exhaustible resources with the development of substitutes
- prevention of emissions in air, water and soil to exceed critical levels
- preservation of landscapes of special human and ecological significance
- the maintenance of the risks of life-damaging results from human events at very low levels.

It is therefore worthy to note that sustainable development is not just focused on firms reducing emissions and ensuring the reuse of renewable and recyclable resource stocks but also the preservation of natural resources so that the management of a crisis, should one occur, will be more efficient to allow firms to resume operations in a timely manner.

The above recommendations can be hindered by government inefficiencies and infighting among lawmakers. While this fact is widely known, the obstacles that can block a sustainable development initiative after a crisis has occurred are less obvious. For example, as aforementioned, some governments are slow to embrace alternative energy sources, even after facing a number of oil crises. What variables are at work that prevents this change process? The organisational development and change literature offers much on how firms and non-profits can change as entities. However, impediments to change after a crisis need to be identified and the processes that move against sustainable development should be noted.

13 Conclusion

Sooner or later, every organisation will face a crisis. A firm's ability to manage or survive a crisis and resume profitable operations depends on many factors among which sustainable development is one. In other words the prevalence of environmental, economic, social and political sustainability can create a buffer for firms and allow them to recover when beset with a crisis. Unfortunately, the profit maximising behaviour of some firms could be detrimental to the survivability of other firms, creating a crisis that may be quite adverse to sustainable development. For example, as an industry mutates through creative destruction (Schumpeter, 1934), it might cause a crisis for some preexisting firms (faced with the threat of entry, loss of market shares, etc.) due to the temporary market power gained through innovation. In such cases, the ability of the firm to survive the crisis and ensure the sustainability of its profit margins, depends on how 'sound' the socio-economic, political and environmental factors prevalent in the industry are to allow the firm to adapt to the challenges posed by the innovator or potential entrant. Sustainable development can therefore be thought of as changes in the economic

structure, organisation and activity of an economic ecological system that are directed towards maximum welfare that can be sustained by available resources (Braat and Steetskamp, 1991). Thus, sustainable development and firm survivability in a crisis, also requires political reform, access to knowledge and resources, and a more just and equitable distribution of wealth (Brundtland, 1989).

Another issue that could create a crisis and hence hinder sustainable development is the over-exploitation of resources by firms and or society. The consequences of such acts include the loss of biodiversity, desertification, ozone layer depletion, depletion of fish stocks, increase in the rate and intensity of natural disasters, etc. Such consequences if ignored could create a crisis or greatly affect a firm's performance in recovery from a crisis.

Against this background we pose the question, how can firms be encouraged to employ resources in a way that enhances sustainable development? Economic theory has shown that for sustainability and optimality in resource use, the firms' decision to utilise resources of any kind in its production process, ought to be such that the Marginal Revenue Product (MRP) of the resource is equal to the Marginal Resource Cost (MRC) of employing that resource. However, in the presence of negative externalities, the marginal cost of the firm ought to include the marginal external cost which has to be equivalent to the amount of external damage the firm imposes on society. The goal is to cause firm's to internalise all the external cost to the economy in terms of pollution, resource depletion and human health. This principle should be considered in prescribing policies that promote sustainable development. This will not only ensure profit maximisation vis-à-vis cost minimisation for firms, but also reduce environmental degradation and over-exploitation of natural resources for today's generation and posterity as well. Sustainable development therefore involves the adoption of production and consumption patterns that protect the natural resource base for current and future use.

Given this background, this paper summarises the linkages between crisis management and sustainable development and to set an agenda for future research. Both areas are currently on the cutting edge of developing new thought. We wish to convey a sense of urgency for researchers, corporate managers and public administration officials to move forward in addressing the research areas proposed in this paper. Crisis management researchers and practitioners should remember that while the nature of crises changes, a common thread is needed to develop practices that can transcend a number of industries and crisis types. Meanwhile, the urgency to sustain resources offers its own set of worst-case scenarios and crises responses. Miscalculations in this arena could exasperate a crisis, or create new ones, as the scramble for finite resources among firms and nations intensifies.

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